SAULT COLLEGE
of Applied Arts and Technology
Sault Ste. Marie

COURSE OUTLINE

METEOROLOGY

AVT 100-6

revised January, 1981 by B. McComiskey

METEROLOGY

AVT 100-3

TEXTS:

Weather Ways - Cat. #T56-464 - Information Canada

From the Ground Up - Sandy A. F. MacDonald - Aviation Publishers Co. Ltd.

Weather - Forecasting and Observing Guide Handout - DND - CPP 295

Aeronautical Information Publication (A.I.P.) - Canada

STUDY AND REFERENCE GUIDES

Study Questions for Private Pilots - Transport Canada, 2nd Edition, 1977

Examination Guide for Private Pilots - Revised 79-80 Edition Continental Aerographics Inc.

Sample Examination for Private Pilot Licence - Transport Canada - 5th Edition, May 1974

Weather-Forecasting and Observing Guide - DND - CFP 295

METEOROLOGY

AVT 100-6

GENERAL OBJECTIVES:

The objective of this course is to provide aviation students with a basic knowledge of the science of weather (meteorology) to enable them to make intelligent use of the weather information provided by the meteorological service in planning and conducting aircraft operations.

METEOROLOGY

AVT 100-6

TOPIC	PERIODS	TOPIC DESCRIPTION	REFERENCES
1,2,3	1	Met Organization & Services Atmosphere Clouds	A.I.P. Canada - Met Wx-FCST and Observing Guide-DND CFP 295 Weather Ways-CH II & III From the Ground Up-P60-61
4	1	Pressure	Weather Ways - CH IV From the Ground Up-P63-64
5	1	Wind	Weather Ways - CH V From the Ground Up - P64-65
Test	1	Progress test on material covered.	
6	1	Moisture and Temperature	Weather Ways - CH VI From the Ground Up - P66-67
7,8	1	Stability and Instability Air Masses	Weather Ways - CH VII, VIII From the Ground Up - P66-69
9	1	Fronts	Weather Ways - CH IX
10,11,12	1	The Cold Front The Warm Front Trowals and Upper Fronts	Weather Ways - CH X, XI, XI
Test	1	Mid Term Exam	
13,14	1	Clouds, Precipitaiton, Fog Visibility	Weather Ways - CH XIII, XIV
15	1	Ice Accretion	Weather Ways - CH XV
16	1	Thunderstorms	Weather Ways - CH XVI
17,18,19	1	Turbulence Precipitation Static Mountain Waves	Weather Ways - CH XVII XVIII XIX
Test	1	Progress test on material covered	
20	1	Weather Maps	A.I.P. Canada - Met Weather - Forecasting and Observing Guide - CH 3 (Handout)

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TOPIC	PERIODS	TOPIC DESCRIPTION	REFERENCES
21,22	1	Aviation Weather Reports Terminal Forecasts	A.I.P. Canada - Met Weather-Forecasting and Observing Guide - CH 4 (Handout)
23,24	1	Area Forecasts Upper Wind Forecasts	A.I.P. Canada - Met Weather-Forecasting and Observing Guide - CH 4 (Handout)
Review	2	Review major points of all material covered.	Weather Ways From the Ground Up Weather-Forecasting and Observer's Guide A.I.P. Canada - Met
Test	1	Final Exam	

SPECIFIC OBJECTIVES

1 Meteorological Organization and Services in Canada

The student is expected to know:
(a) the organization of the meteorological service
(b) the services provided to aviators

2 Atmosphere

The student is required to know:
(a) the composition of the atmosphere
(b) the properties of the atmosphere
(c) divisions and characteristics of the atmosphere
(d) ICAO standard atmosphere

3 Clouds

The student is required to know:
(a) the classification and description of clouds

4 Pressure

The student is required to know:
(a) the nature of atmospheric pressure
(b) the units in which it is expressed
(c) the vertical and horizontal variations under different conditions
(d) how altimeters are set
(e) how wind and weatehr are related to pressure distribution as displayed on a weather map

5 Wind

The student is required to know:

(a) the forces which cause and influence air motion both at the surface and in the upper levels of the atmosphere

6 Moisture and Temperature

The student is required to know:
(a) the scales used to express temperature
(b) how the moisture content of the air affects weather
(c) how the atmosphere is heated
(d) how the atmosphere is cooled

7 Stability and Instability (Vertical Motion)

The student is required to know:
(a) the meaning and significance of the term "stability"
(b) the relationship between lapse rate and stability
(c) modification of stability
(d) characteristics of weather in stable and unstable air
(e) agencies which give rise to vertical motion

8 Air Masses

The student is required to know:
(a) the meaning of the term "Air Mass"
(b) the formation and classification of Air Masses
(c) factors determining the weather in an air mass
(d) modification of air masses
(e) air mass weather in Canada

9 Fronts

The student is required to know:
(a) the symbols for fronts on weather charts
(b) the structure of fronts
(c) types of fronts
(d) Norwegion Theory of Cyclones (Stages 1-V1)

10 The Cold Front

The student is required to know:
(a) the structure of a cold front
(b) surface weather changes
(c) flight problems associated with the cold front

11 The Warm Front

The student is required to know:
(a) the structure of the warm-front
(b) surface weather changes
(c) flight problems associated with the warm front

12 Trowals and Upper Fronts

The student is required to know:
(a) weather associated with trowals and upper fronts

13 Clouds, Precipitation and Fog

The student is required to know:
(a) physical processes of cloud formation
(b) physical process of precipitation formation
(c) physical process of fog formation

14 Visibility

The student is required to know:
(a) the meaning of the term "visibility"
(b) restrictions to visibility

15 Ice Accretion

The student is required to know:
(a) the effects of ice on aircraft performance
(b) how ice forms
(c) types of icing
(d) icing protection techniques

16 Thunderstorms

The student is required to know:
(a) the main features of thunderstorms
(b) effects on flight operations

17 Turbulence

The student is required to know:
(a) the causes of turbulence

18 Precipitation Static

The student is required to know:
(a) weather conditions which favour precipitation static

19 Mountain Waves

The student is required to know:
(a) the features of mountain waves
(b) effects on flight operations

20 Weather Maps

The student is required to know:
(a) how to identify and interpret the significant features of surface and upper level weather charts

21 **Aviation Weather Reports** (SA)

The student is required to know:
(a) how to decode and interpret all information provided on hourly reports

22 **Terminal Forecasts** (FT)

The student is required to know:
(a) how to decode and interpret all information provided in terminal forecasts

23 **Area Forecasts** (FA)

The student is required to know:
(a) how to decode and interpret all information provided in area forecasts

24 **Upper Wind Forecasts** (FD)

The student is required to know:
(a) how to decode upper wind forecasts
(b) how to interpolate forecast winds to apply to flight operations